REMARKS

In view of the following discussion, the Applicants submit that none of the claims now pending in the application are obvious under the provisions of 35 U.S.C. § 103. Thus, the Applicants believe that all of these claims are now in allowable form.

I. REJECTION OF CLAIMS 1-38 UNDER 35 U.S.C. §103

A. Claims 1, 5-9, 20-34 and 36

The Examiner has rejected claims 1, 5-9, 20-34 and 36 in the Office Action under 35 U.S.C. § 102 as being unpatentable over McCloghrie, et al. (US Patent 6,920,112, issued July 19, 2005, hereinafter referred to as "McCloghrie.") in view of Cen (US Patent 6,738,349, issued May 18, 2004). The Applicants respectfully traverse the rejection.

McCloghrie teaches sampling packets for network monitoring. A traffic management element is coupled to substantially all of the input interfaces and output interfaces and is disposed to receive substantially all of the packets input to the packet switch and to sample a fraction of those packets. (See McCloghrie, col. 3, ll. 30-41.) The sample is performed by selecting a control parameter N. (See McCloghrie, col. 4, ll. 41-54.) Thus, one out of every N packets is selected by the sampling element for further processing by the traffic management element. (See *Id.*)

Cen teaches a non-intrusive measurement of end to end network properties. Specifically, Cen teaches that two monitors: an ingress and an egress monitor are employed, where each monitor generates a time stamp for each intercepted packet. In turn, a correlator will be able to review time stamps for these intercepted packets to determine latency within the network. As such, Cen requires that the same packets be intercepted by the ingress and the egress monitors. (See Cen, Abstract, and Column 4, lines 47-49)

The Examiner's attention is directed to the fact that McCloghrie and Cen alone or in any permissible combination fail to teach, show or suggest a method for managing a data network, the method comprising the step of determining whether to sample the object in accordance with a probabilistic parameter, as positively claimed by Applicants' independent claim 1. Specifically, Applicants' independent claim 1 positively recites:

1. A method for managing a data network, comprising the steps of:
receiving an object, wherein the object is characterized by at least one attribute and wherein the object comprises at least one data element;
determining whether to sample the object in accordance with a probabilistic parameter;
sampling the object in response to said determining step; and
processing the sample in response to said sampling step. (Emphasis added.)

The Applicants' invention teaches a method for managing a data network, the method comprising the step of determining whether to sample the object in accordance with a probabilistic parameter. Namely, the Applicants' invention uses a probabilistic parameter that determines the probability that a given flow will be sampled. (See Applicants' specification, e.g., paragraph [42].) The value of z can be set to achieve the desired accuracy or traffic volume. (See *Id.*) The parameter z acts as a threshold: flow of size z or above are always sampled as shown in Figure 2. (See *Id.* at paragraph [41].)

In contrast, the alleged combination (as taught by McCloghrie) completely fails to make obvious Applicants' invention. McCloghrie teaches away from the Applicants' invention because McCloghrie only teaches using a control parameter N. (See McCloghrie, col. 4, ll. 41-54.) In one embodiment, the control parameter N instructs the sampling element to select one out of every N packets for further processing. (See *Id.*) This is directly contrary to Applicants' invention which states that such regular interval sampling method is subject to high variance. (See Applicants' specification, paragraph [38]). Thus, McCloghrie is teaching a method that Applicants' specification specifically states as a problem.

Furthermore, McCloghrie also teaches that control parameter N can be changed in response to the "length of a sampled packet queue 230", "to prevent processor overload", and "packet type frequency". (See McCloghrie, Column 5, line 1 to Column 6, line 7). In other words, McCloghrie is changing the sampling rate in response to how full is a sampling queue, how overloaded is a processor and what packet types are being received. None of these parameters is a probabilistic parameter. To illustrate, McCloghrie simply states that:

> "The sampled packet queue 230 is coupled to the adaptive sampling controller 240. The adaptive sampling controller 240 compares the length of the sampled packet queue 230 against a lower threshold 231 and an upper threshold 232. The adaptive sampling controller 240 sets the value of the control parameter N responsive to this comparison, and outputs the value of N to the sampling element 220." (See McCloghrie, Column 5, lines 1-7)

Clearly, McCloghrie fails to teach the use of a probabilistic parameter as positively recited in the claims of Applicants' invention. The simple measurement of how full is a sampling queue is not a probabilistic parameter. Therefore, McCloghrie does not teach a method for managing a data network, the method comprising the step of determining whether to sample the object in accordance with a probabilistic parameter. As such, the Applicants respectfully submit that McCloghrie clearly does not make obvious Applicants' independent claim 1.

Furthermore, the significant gap left by McCloghrie is not bridged by Cen. First, Cen teaches that packets that are sampled must be the same packets that are sampled by both the ingress monitor and the egress monitor. In other words, the sampling parameter as taught by Cen is such that both monitors will sample the same set of packets. As such, Cen's sampling approach is only premised on proper identification of the packets and not based on a probabilistic parameter. Second, Cen teaches the use of signature bit masking where packets having certain "signature", e.g., specific given value" will be sampled. As such, Cen's approach ensures that any packets with the proper signature will be intercepted by both the ingress monitor and the egress monitor. (See Cen, Column 4, lines 55-62) Again, since Cen is only concerned with end to end measurements, its sampling approach is only premised on proper identification of the intercepted packets and is not based on a probabilistic parameter. In other words, Cen does not teach or suggest the step of determining whether to sample the object in accordance with a probabilistic parameter.

Finally, it appears that McCloghrie teaches away from Cen, because McCloghrie teaches the use of the fullness of a queue to control the sampling, whereas Cen teaches a sampling approach where two monitors must intercept the same set of packets. In other words, McCloghrie's approach is not restricted to the synchronization

of a plurality of monitors as required by Cen. As such, the combination of McCloghrie and Cen does not make obvious Applicants' independent claim 1.

Furthermore, dependent claims 5-9, 20-34 and 36 depend, either directly or indirectly, from claim 1 and recite additional limitations. As such, and for the exact same reason set forth above, the Applicants submit that claims 5-9, 20-34 and 36 are also patentable and are not made obvious by McCloghrie in view of Cen. As such, the Applicants respectfully request the rejection be withdrawn.

B. Claims 2-4, 10, 12, 13 and 35

The Examiner has rejected claims 2-4, 10, 12, 13 and 35 in the Office Action under 35 U.S.C. § 103 as being unpatentable over McCloghrie in view of Cen and further in view of Muratani, et al. (U.S. Patent 6,119,109, issued September 12, 2000, hereinafter referred to as "Muratani"). Applicants respectfully traverse the rejection.

The teachings of McCloghrie and Cen are discussed above. Muratani teaches an information distribution system and billing system used for the information distribution system. The information distribution system comprises a billing processor. (See Muratani, Abstract.) The information comprises a content, billing attribute data including a billing method and a settlement method and correspondence information. (See *Id.*) When a request is made from the user, the information distribution system retrieves the content which meets the request and transfers a request to the billing processor to perform the billing process. (See *Id.*)

The Examiner's attention is directed to the fact that McCloghrie, Cen and Muratani, alone or in any permissible combination fail to teach, show or suggest a method for managing a data network, the method comprising the step of determining whether to sample the object in accordance with a probabilistic parameter, as positively claimed by independent claim 1. (See *supra*.) As discussed above, McCloghrie and Cen only teach using a control parameter N that is not a probabilistic parameter or a signature bit masking approach. Moreover, Muratani fails to bridge the substantial gap left by McCloghrie and Cen. Muratani only teaches retrieving and processing billing information only when a request is made from a user. (See Muratani, Abstract.) Therefore, the combination of McCloghrie, Cen and Muratani fail to teach, show or

suggest a method for managing a data network, the method comprising the step of determining whether to sample the object in accordance with a probabilistic parameter, as positively claimed by independent claim 1.

Consequently, the Applicants submit that claim 1 would not be made obvious by the teaching of McCloghrie, and Cen in view of Muratani, and therefore is patentable under 35 U.S.C. § 103. Since claims 2-4, 10, 12, 13 and 35 depend, either directly or indirectly, from claim 1 and recite additional limitations, the Applicants submit that claims 2-4, 10, 12, 13 and 35 are also not made obvious by the teaching of McCloghrie and Cen in view of Muratani. Therefore, the Applicants submit that claims 2-4, 10, 12, 13 and 35 also fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder. As such, the Applicants respectfully request the rejection be withdrawn.

C. Claims 11, 14-19, 37 and 38

The Examiner has rejected claims 11, 14-19, 37 and 38 in the Office Action under 35 U.S.C. § 103 as being unpatentable over McCloghrie and Cen in view of Muratani and in further view of Smyth, et al. (U.S. Patent 6,347,224, issued February 12, 2002, hereinafter referred to as "Smyth"). Applicants respectfully traverse the rejection.

The teachings of McCloghrie, Cen and Muratani are discussed above. Smyth teaches charging systems for services in communications. In a charging system for cellular communications, real-time prices for new connections are offered to the customer. (See Smyth, Abstract.)

The Examiner's attention is directed to the fact that McCloghrie, Cen, Muratani and Smyth, alone or in any permissible combination fails to teach or suggest the novel concept of a method for managing a data network, the method comprising the step of determining whether to sample the object in accordance with a probabilistic parameter, as positively claimed by Applicants' independent claims 1, 37 and 38. Specifically, Applicants' independent claim 1 is recited above. Applicants' independent claims 37 and 38 positively recite:

37. A method for charging a customer for usage of a data network, comprising the steps of:
adjusting a probabilistic parameter in accordance with a charging accuracy;
receiving an object, wherein the object is characterized by a size and a customer;
determining whether to sample the object in accordance with the probabilistic parameter, wherein the probabilistic parameter approximately optimizes a cost function and wherein the cost function relates the probabilistic parameter to a sampling accuracy and a sampling volume;
sampling the object in response to said determining step;
normalizing the sample in response to said sampling step;
determining the usage for the customer in accordance with said normalizing step;
adjusting the usage in accordance with the charging accuracy; and
determining a charge to the customer in response to said adjusting step.
(Emphasis added.)

38. A method for managing a data network in accordance with a traffic volume, comprising the steps of:
adjusting a probabilistic parameter for a sampling window in accordance with a targeted sampling volume;
receiving an object, wherein the object is characterized by a size;
determining whether to sample the object in accordance with the probabilistic parameter, wherein the probabilistic parameter approximately optimizes a cost function, wherein the cost function relates the probabilistic parameter to a sampling accuracy and a sampling volume;
sampling the object in response to said determining step;
normalizing the sample in response to said sampling step;
determining an estimated traffic volume in accordance with said normalizing step; and
utilizing the estimated traffic volume to manage the data network.
(Emphasis added.)

The Applicants' invention teaches a method for managing a data network, the method comprising the step of determining whether to sample the object in accordance with a probabilistic parameter. The Applicants' invention uses a probabilistic parameter that determines the probability that a given flow will be sampled. (See Applicants' specification, e.g., paragraph [42].) The value of z can be set to achieve the desired accuracy or traffic volume. (See *Id.*) The parameter z acts as a threshold: flow of size z or above are always sampled as shown in Figure 2. (See *Id.* at paragraph [41].)

As discussed above, McCloghrie and Cen only teach using a control parameter N that is not a probabilistic parameter or a signature bit masking approach. Moreover, Muratani and Smyth fail to bridge the substantial gap left by McCloghrie. Muratani only teaches retrieving and processing billing information only when a request is made from a user. (See Muratani, Abstract.) Smyth only teaches offering real-time prices for new connections in a charging system for cellular communications. (See Smyth, Abstract.) Therefore, the combination of McCloghrie, Cen, Muratani and Smyth fail to teach, show or suggest a method for managing a data network, the method comprising the step of determining whether to sample the object in accordance with a probabilistic parameter, as positively claimed by independent claims 1, 37 and 38.

Consequently, the Applicants submit that claims 1, 37 and 38 would not be made obvious by the teaching of McCloghrie and Cen in view of Muratani and in further view of Smyth, and therefore are patentable under 35 U.S.C. § 103. Since claims 11 and14-19 depend, either directly or indirectly, from claim 1 and recite additional limitations, the Applicants submit that claims 11 and14-19 are also not made obvious by the teaching of McCloghrie and Cen in view of Muratani and in further view of Smyth. Therefore, the Applicants submit that claims 11 and14-19 also fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder. As such, the Applicants respectfully request the rejection be withdrawn.

Conclusion

Thus, the Applicants submit that claims 1-38 now fully satisfy the requirements of 35 U.S.C. §103. Consequently, the Applicants believe that these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues in any of the claims now pending in the application, it is requested that the Examiner telephone Mr. Kin-Wah Tong, Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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